



Program and Abstracts

SPEECH AND LANGUAGE 2015

5th International Conference on Fundamental and
Applied Aspects of Speech and Language

Belgrade
17-18 October, 2015

Patron:

Ministry of Education, Science and Technological Development – Republic of Serbia

Organizing:

Organizing Committee, IEPSP, LAAC Secretariat, Gospodar Jovanova 35, 11000
Belgrade, Serbia. Tel./Fax: (+381 11 3208 544, +381 11 2624 168,).
e-mail: iefpg@iefpg.org.rs web: <http://www.iefpg.org.rs>

Publisher:

Life activities advancement center
The Institute for Experimental Phonetics and Speech Pathology

Electronic version on publication

Editors: Mirjana Sovilj, Miško Subotić

Technical editors: Slavica Maksimovic, Jevrem Bojović

Circulation: 500

ISBN: 978-86-89431-06-3

Print: Draslar Partner, Belgrade, Dalmatinska 47

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PROGRAM

Saturday, 17 October 2015

09:00–10:00	Registration	
10:00–11:00	Opening ceremony and Presentation of CSL Probability Distribution of Serbian Noun Cases: Diachronic Study	Aleksandar Kostić

SESSION: PL1 PLENARY LECTURES

Time: 11:00–13:00

Chairpersons: Aleksandar Kostić, Dimitar Popov, Grigori Brekhman

PL 1.1 11:00– 11:30	Metachemistry: Alphabet Of Sense And Sense Of Alphabet	Dljasin Genadij Genadijević
PL 1.2 11:30– 12:00	Fundamental And Applied Aspects Of Speech Profiling	Dimitar Popov
PL 1.3 12:00– 12:30	World Ecology-Womb Ecology As A Way For Preventive Of The Speech-Language Disorders	Grigori Brekhman
PL 1.4 12:30– 13:00	Word, Man and the Cosmos	Mirjana Sovilj
13:00– 14:00	Welcome party	

SESSION: PL2 PLENARY LECTURES

Time: 14:00–16:00

Chairpersons: Gordana Varošaneć-Škarić, Veselinka Labroska, Mirjana Sovilj

PL 2.1 14:00– 14:30	Acoustic Characteristics Of Croatian Cardinal Vowel Formants (F1, F2 I F3)	Gordana Varošaneć- Škarić Iva Bašić
PL 2.2 14:30– 15:00	Pronunciation And Phonological Value Of 'K' And 'G' Voices In Contemporary Macedonian Language	Veselinka Labroska Blaga Paneva
PL 2.3 15:00– 15:30	Now Our Brains Give Us Even More To Say!©2015	Jon RG and Troya GN Turner
PL 2.4 15:30– 16:00	Objective approach to the acoustic characteristics of stridence	Miško Subotić, Zoran Šarić, Ružica Bilibajkić, Slobodan T. Jovičić, Silvana Punišić
16:00– 16:30	Coffee break	

SESSION: O1 ORAL PRESENTATIONS

Time: 16:30–18:30

Chairpersons: Drago Đorđević, Zoran Šarić, Zorica Cvetanović

O 1.1 16:30– 16:40	Transsoul Communication	Danijela Gajić
O 1.2 16:40– 16:50	Global Approach In Rehabilitation Of Hearing, Speech And Language Of A Child With Down Syndrome – A Case Study	Arnalda Dobrić Lorena Nemet
O 1.3 16:50– 17:00	Electromagnetic Fields And Speech Problems	Drago Đorđević
O 1.4 17:00– 17:10	Cognition, Behaviour, Learning, Speech And Language: The Study Of Students With Mnemonic Difficulties	Maria Drossinou

O 1.5 17:10– 17:20	Howling Suppression In Digital Ksafa Using Adaptive Filtering	Zoran Šarić Miško Subotić Ružica Bilibajkić Slobodan Jovičić Đorđe Grozdić
O 1.6 17:20– 17:30	EEG Correlates Of Non-Verbal Transpersonal Holistic Psychosomatic Communication	Biljana Bedričić Miodrag Stokić Zorana Milosavljević Dragan Milovanović Mirko Ostojić Dejan Raković Mirjana Sovilj Slavica Maksimović
O 1.7 17:30– 17:40	Maximal Vowel Space As Indicator Of Atypically Articulation Organs Development	Milan Vojnović
O 1.8 17:40– 17:50	Basic Elements Of Functional Literacy In Younger Students	Zorica Cvetanović Ivica Radovanovic Kristina Šulović Petković
O 1.9 17:50– 18:00	Validation Of Croatian Voice Handicap Index	Diana Tomić Gordana Varošaneć-Škarić
O 1.10 18:00– 18:10	Contrastive Analysis Of Slovenian And Serbian Vowels	Hotimir Tivadar
O 1.11 18:10– 18:20	Motor Speech Disorders in Patients with Focal and Diffused Subcortical Vascular Lesions	Gordana Tomić Milena Stojanović Dragan Pavlović Aleksandra Pavlović Predrag Stanković Milija Mijajlović Jasna Zidverc - Trajković
O 1.12 18:20– 18:30	Introduction to the mythological story of the CENTAUR HEIRON, THE WOUNDED HEALER	Altani
18:30– 19:30	Workshop Relief in psychological and psychosomatic traumas by means of body discomfort personification	Sh.S. Tashaev
20:00– 23:00	Dinner (optional)	

SESSION: P1 POSTER PRESENTATIONS

Time: 11.30–19.00

Chairpersons: Ljiljana Dobrijević, Tatjana Adamović

P 1.1	Onset Of Speech In Children Whose Vestibular Function Was Tested At Birth	Tatjana Adamović Selena Todorović Mirjana Sovilj
P 1.2	Level Of Acquisition Of Science In Typical And Hearing Impaired Students	Ivana Pavkovic
P 1.3	Neuropsychological Features Of Developmental Verbal Apraxia	Vivien Đorđević Marijana Panić
P 1.4	Pronouns And Adjectives Acquisition In Preschool Children With Speech And Language Pathology	Vivien Đorđević, Marijana Panić
P 1.5	Autism And Gastrointestinal Disorders	Bojana Bobić Gece, Ljiljana Jeličić Dobrijević Marija Vukić
P 1.6	Prevalence Of Articulatory Errors Among Children With Dyslalia	Ivana Bogavac Ljiljana Jeličić Saška Fatić
P 1.7	Component-Based Programming for Speech and Language Pathologists	Jasna Hamzabegović
P 1.8	Effect Of Foxp2 In The Developing And Mature Brain	Marijana Rakonjac Marina Vujovic
P 1.9	Acoustic Characteristics Of The Vowel A At Patients With Acute Laryngitis	Nevena Popic Marijana Rakonjac
P 1.10	The Theory Of Mind And Language Skills In Hearing Impaired Children	Selena Todorovic Tatjana Adamovic Sanja Djokovic

P 1.11	Lineation Quality In Second And Third Grade Elementary School Children	Milana Mitrovic Nina Stanojevic Marijana Panic Silvana Punisic
P 1.12	Auditory Information Processing In Children With Specific Language Impairment Examined By Eeg Cartography	Zoran Radičević Ljiljana Jeličić Miodrag Stokic Vanja Nenadović Mirjana Sovilj Miško Subotić
P 1.13	Hearing Evaluation in Children with Articulation Disorders	Slavica Maksimovic
P 1.14	The influence of communication mechanisms for acceptance and understanding of deaf people in sheltered workshops and open economy	Ivana Mitrovic - Djordjevic Biljana Petrovic

Sunday, 18 October 2015

SESSION: PL3 PLENARY LECTURES

Time: 09.30–11.30

Chairpersons: Olga Gouni, Mila Alečković Nikolić, Velka Popova

PL 3.1 09:30– 10:00	The contribution of Prenatal Psychology to our understanding about prenatal dynamics and fetal behaviour	Olga Gouni
PL 3.2 10:00– 10:30	Language Creativity, Lateralisation and Dreams	Mila Alečković Nikolić
PL 3.3 10:30– 11:00	Intuitive Model Of Time In Child Language Acquisition	Velka Popova
PL 3.4 11:00– 11:30	Intersection Of Cognitive Linguistics And Linguocultural Studies	Rajna Dragičević
11:30– 12:00	Coffee break	

SESSION: PL4 PLENARY LECTURES

Time: 12:00–14:00

Chairpersons: Dejan Raković, Shamil S. Tashaev, Miloje M. Rakočević

PL 4.1 12:00– 12:30	On Biophysical Energy-Informational Nature Of Acupuncture System, Consciousness And Vital Energy	Dejan Raković
PL 4.2 12:30– 13:00	On The Issues Of Information And Its Interaction With The Human Perception	Shamil S. Tashaev
PL 4.3 13:00– 13:30	Universal Consciousness In Njegosh's Po (I) Ethics	Miloje M. Rakočević
PL 4.4 13:30– 14:00	New Structural Analysis Of The Serbian Language As A Primordial Harmonic Universe Assembly	Miloš Grozdanović Adela Margot Mirjana Sovilj
14:00– 15:00	Lunch	

SESSION: O2 ORAL PRESENTATIONS

Time: 15.00 - 16.40

Chairpersons: Slobodan T. Jovičić, Milan Vojnovic

O 2.1 15:00– 15:10	Manifestation Of Lateral Sigmatism In Spectral Domain	Milan Vojnovic Ljiljana Jelcic
O 2.2 15:10– 15:20	Quantitative Analysis Of Ag501 – Calibration And Head-Movement Correction	Ružica Bilibajkić Saška Fatić Ivana Bogavac

		Silvana Punišić Miško Subotić
O 2.3 15:20– 15:30	Regional Eeg Complexity Changes In Auditory-Verbal Short-Term Memory Task For Words And Nonwords: Sample Entropy Analysis	Miodrag Stokić Vanja Nenadović Milena Čukić
O 2.4 15:30– 15:40	Comparison Of Gmm/Ubm And I-Vector Based Speaker Recognition Systems	Đorđe Grozdić Slobodan Jovići Zoran Šarić Miško Subotić
O 2.5 15:40– 15:50	The Impact Of Learning At Whisper Pronunciation Quality	Silvana Punisić, Slobodan Jovicic Misko Subotic
O 2.6 15:50– 16:00	An Exploration Of Some Speech And Language Operations In Normally Developing Children	Plamen Petkov Zhivko Zhekov Violeta Kyurkchyska
O 2.7 16:00– 16:10	Resting state cortical brain activity and attention in children with autistic spectrum disorder	Vanja Nenadović Miodrag Stokić, Selena Todorović
O 2.8 16:10– 16:20	Optimal Resampling Of Imbalanced Data: Speech Pathology Detection	Drasko Furundzic, Misko Subotic, Silvana Punisić
O 2.9 16:20– 16:30	Contrastive Analysis Of Slovenian And Serbian Vowels	Hotimir Tivadar
O 2.10 16:30– 16:40	Introduction to the mythological story of the CENTAUR HEIRON, THE WOUNDED HEALER	Altani
16:40– 17:00	Coffee break	
17:00– 18:00	Workshop The 5 most significant answers we are asked to provide in the next 50 years and how Prenatal Psychology can offer understanding How is that?	Olga Gouni
18:00– 19:00	Workshop The Whole-Self Fourth Dimensional Balancing	Smilja Janjatović
19:00– 19:30	Closing ceremony	

Monday, 19 October 2015 – The Institute for Experimental Phonetics and Speech Pathology, Gospodar Jovanova 35

14:00– 19:00	Workshop Characteristics of children born with C-section- possibilities of prevention and treatment	Olga Gouni
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Tuesday, 20 October 2015 – The Institute for Experimental Phonetics and Speech Pathology, Gospodar Jovanova 35

14:00– 19:00	Workshop Prenatal roots of aggression and violence and possibilities of early treatment	Olga Gouni
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Wednesday, 21 October 2015 – Srpsko lekarsko društvo, Džordža Vašingtona 19

14:00– 15:00	Pelvic position of fetus as genetic- psychological phenomenon and possibilities of its correction	Grigori Brekhman
15:00– 17:00	What nature made in order to protect mother and a child during delivery? Why this system often does not work and how should we use it?	Grigori Brekhman

ABSTRACT

PROBABILITY DISTRIBUTION OF SERBIAN NOUN CASES: DIACHRONIC STUDY

Aleksandar Kostić

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Faculty of philosophy, University of Belgrade

Cases in inflected languages appear with different probability. Thus, for example, in Serbian the nominative and the accusative case are very frequent, while cases like dative and instrumental are relatively infrequent. In the present study we investigate probability changes of Serbian noun cases in the span of eight centuries. Specifically, we compare two distinct periods in development of Serbian language: language from 12th to 18th century and the contemporary Serbian language.

Materials for this comparison are derived from the *Corpus of Serbian Language* (Kostić, Đ., 2001) which was initiated in the mid-fifties by Prof. Đorđe Kostić at the Institute for Experimental Phonetics and Speech Pathology. The Corpus consists of 11 million words and spans Serbian language from the 12th century to the contemporary language. Each word from the Corpus is manually lemmatized and annotated for its grammatical status. The sample of Serbian language from 12th to 18th century, standardly referred to as Serbian-Slavonic, consists of 500.000 words. In the present analysis the sample of contemporary Serbian language consists of two million words and is divided into two subsamples: daily press and poetry.

Differences in probability distribution of inflected cases for the two periods were analyzed by two measures: *correlation coefficient* and *Shannon's equitability*. Correlation coefficient is taken as a measure of distributions' similarity (or divergence). Shannon's equitability is less common measure and needs some clarification. It is a measure of divergence of entropy of a given system from its maximum entropy ($E_H = H/H_{\max}$). In our case, it is a measure that indicates the divergence of entropy derived from probability distribution of inflected cases from maximum entropy.

Probability distributions of masculine, feminine and neuter noun cases from the two periods were correlated. Correlation coefficients indicate conspicuous differences in probability distributions between the two periods. In contrast, minimal differences were observed in Shannon's equitability values. These findings indicate that in spite of the radical changes in probability distributions of noun cases in the span of eight centuries, the distance from the maximum entropy seems to be preserved. This, on the other hand, suggests that while local variations of case probabilities are permissible, homogeneity of the overall probability distribution (defined as a given E_H value) has to be conserved over time.

METACHEMISTRY: ALPHABET OF SENSE AND SENSE OF ALPHABET

Djasin Genadij Genadijević

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We are looking at the concept of Alphabet (2013) - 3D-system of sounds of human speech not associated with a particular language. It goes back to the author's system of amino acids of the protein and early ideas about its relationship with the alphabet (1998). We are giving examples of proof of systemity of the alphabet through study the patterns of change in the qualitative and quantitative properties of sounds of speech, using several languages, as well as by identifying the meanings of sounds and building Alphabet of Meaning. The concept of co-symmetry (symmetry relation) is the main regularity of all discovered here alphabets - sounds of speech and also constituents of the genetic code. It should be emphasized that it is the detection of symmetry and co-symmetry in the series of elements of the systems studied was one of the main methods of research and proof. Also the concept of symmetry of sense is introduced. In addition, the concept of the Dictionary of Meaning has been presented and this dictionary has been developed for Russian and partly English. For the first time a proof of misconceptions about the appearance of meaning only on the level of words has been conducted and we have proved that Meaning present at the level of sounds and syllables. All of the evidence conducted revealed characteristic patterns within the system of the alphabet (and its essence as a "standing wave", resonant oscillating circuit, even until the attractor), allowing it to consider ABC as the inherent and main system of communication in each floor of the Universe. Given that the work is a synthetic, basic concepts of related topics are being brought up. Such as co-symmetry and semiotic features of 3D-system genetic of code and the periodic system of D.I. Mendeleev. Or, for example, quantitative evidence of unity of the laws of chemistry, biology, linguistics

and sociology. It should be emphasized that this is a philosophical work, dedicated to the scientific synthesis, however, is based on large arrays of numerical data of chemistry, molecular biology and phonetics. The article summarizes the findings of both the theoretical challenges (requiring a new theory of atomic structure) - and the practical possibilities of new technologies within each of the sciences, for example, in areas of artificial intelligence and speech or constructing a "tree" of languages (the characteristic "signature" for each of the languages); speaker (authorship) identification; the theory and practice of language learning and translation, bioinformatics and many others. One of the results was a new formulation of the anthropic principle.

WORLD ECOLOGY – WOMB ECOLOGY AS A WAY TO PREVENTIVE OF SPEECH AND LANGUAGE DISORDERS

Grigori Brekhman

Israel

Disorders of speech and language of the child, and with them - his communicative function, are not isolated, but apparently - more visible. They are often part of the psychosomatic syndromes that have the prenatal origins and are the result of a complex interaction of prenatal child, as a part of the mother-fetus system, with external ecological environment of social and natural properties. Influencing factors of various levels, the severity and duration - from the mother's emotional outburst to major natural, technological, social upheavals - in different ways cause the changes in the internal environment of a mother and her child, which develops and therefore very sensitive to changes in this environment. We can assume that in the process of adapting to changes arising include the child's protection mechanisms, his gene system with its epigenetic reactions. This may affect the regulatory mechanisms of language and speech. Subsequently, it manifests by the communicative function disorders as one of the consequences of the harmful effects of social and nature environment.

ON BIOPHYSICAL ENERGY-INFORMATIONAL NATURE OF ACUPUNCTURE SYSTEM, CONSCIOUSNESS AND VITAL ENERGY

Dejan Raković

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The biophysical energy-informational nature of the acupuncture system, consciousness, and vital energy is considered, from the three aspects: quantum-informational electromagnetic, quasi-classical ionic, and transpersonal exotic. First, quantum-informational electromagnetic aspect of the acupuncture system is pointed out, as indicated by quantum-coherent characteristics of the Russian-Ukrainian school of microwave resonance therapy, and the discovery that any quantum system has formal mathematical structure of Hopfield quantum-holographic associative neural network. It is also pointed out that the acupuncture system is related to consciousness, as supported by the very effective meridian (psycho / energy) therapies with successive setting new boundary conditions in the acupuncture energy-state during emotionally-involved visualizations of the psychosomatic problems. On the other hand, the quasi-classical ionic aspect of the acupuncture system is suggested by research of the non-threshold "gap junction" electrical synapses, which have shown an order of magnitude increased their concentration at acupuncture points, that is consistent with a much lower electrical resistance of acupuncture points compared to the surrounding tissue, as well as a significantly higher absorption of ions in these points. Finally, the transpersonal exotic aspect of the energy-information communications was pointed out (known in all traditions, and now widely used in transpersonal energy therapies such as Qigong, Reiki, pranic healing...), through established and stabilized energy-information channels of vital energy (qi, ki, prana...), pointing to a deeper exotic space-time nature of these energy-information channels (i.e. connection with exotic quantum vacuum fluctuations, necessary for anti-gravitational stabilization of the space-time channels). These considerations might imply that joint research on the crossroad of psychosomatic integrative medicine (and related long standing open problems of acupuncture system and consciousness, including vital energy and

transpersonal phenomena) and quantum informatics (and related open problems of quantum physics and general relativity) may become fruitful in spreading frontiers of the existing scientific paradigm.

Keywords: acupuncture system, consciousness, vital energy, integrative biophysics, quantum-holographic informatics, quantum-informational medicine, ions, transpersonal communications.

ON THE ISSUES OF INFORMATION AND ITS INTERACTION WITH THE HUMAN PERCEPTION

Shamil S. Tashaev

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Human perception assimilates information by giving it a certain meaning. More developed “second signaling system”, i.e. verbal speech distinguishes a man from the animals. Assimilating information not always requires brain development. There are facts proving the existence of perception to a pre-nate at very early stages of prenatal development when the brain has not yet developed. Getting this information is possible in postnatal period of human development, when the brain is developed enough and has no serious damage.

The classification of types of perception is being made, including the following

Conclusions:

- Human verbal speech is a non-material carrier and transmitter of the information;
- Perception is a complex pattern. It consists of several parts, each is accountable accordingly to consciousness and components of the unconscious: perinatal, and we postulated a median perception – an entity where is possible interaction of all perceptions together;
- Median perception is able to receive information and interact with it at all levels of the information fields;
- Interaction with the information regardless of how it was received, can affect any area of human activity;

Confirmation by independent researchers of our data and conclusions based on this data, in particular on the possibilities of information exchange in the median perception, can lead modern civilization to a new level of evolution.

Keywords : perception, information, meaningful patterns

WORKSHOP

«Relief in psychological and psychosomatic traumas by means of body discomfort personification»

Sh.S. Tashaev

Psychosomatic diseases, in any case, are based on person's perception, and perception is formed based on life experience, including prenatal period of human development. Having in mind relatively huge amount of components that create our perception, to find an absolutely identical meaning in description of one situation from several different persons is practically impossible. Nevertheless, physical perceptions and feelings provoked by some external or internal stimulus can be formalized and identified. For example, pity (heart contracted with pity), sorrow (shoulders sagged with grief), blue depression, pain (everything swam around in pain) etc. That identification happens unconsciously and appears in some symbols and signs and it is present in a certain way in some physical perceptions through some discomfort.

We made a conclusion that perception contains several divided blocs grouped in three major formations: conscious, unconscious and alter personal formation. Every of the abovementioned formations has its specific assessment to the surrounding reality.

Assessment of the conscious formation gives some sense to the object or action. Without the „sense“ object and action present „thing in itself“, and that can be the reason which provokes a traumatic

situation. But forming the sense does not always provide a protection from psychometric diseases, remembering that the situation is not always adequate.

Dealing with conscious perception it happens very often to misidentify yourself with the situation during which personal sense becomes more global. Transition from personal sense to the situation with more universal meaning, leads to misidentification with no adequate situation. Perception gets additional level of liberty and a man is not bounded any more with dualistic way of thinking „this or that“ and finds a suitable solution to the problem, made by its perception. That is how rational psychotherapy of psychometric disease is lead.

Unconscious perception, by the rule, deals with symbols. A distinctive feature for unconscious perception is leak of logics from conscious perception, because the symbol, by the rule, has many different features and does not have a unique, easily recognisable sense.

Dealing with unconscious perception, symbol's decoding leads to the formation of the meaning and, naturally, takes that situation to the field of conscious perception. Formation of the meaning happens when you deal with physical discomfort. Dealing with psychotic component of unconscious perception formation of structural dissociation should be taken into consideration and psychotherapist should make the effort to transfer the dissociative person to the system, which is under the control of the central person. This is something we easily get by detecting physical discomfort and giving it certain sense, e.g. introducing here the logic of conscious perception. In this case, gaining an additional level of liberty from the situation happens and it helps to turn away from dualistic way of thinking.

LANGUAGE CREATIVITY, LATERALISATION AND DREAMS

Mila Alečković Nikolić

Several authors have posited a specialized role for the right cerebral hemisphere in the process of dreaming . The study of hemispheric specialization has revealed a right hemisphere superiority for a variety of visual/spatial cognitive processes.

On the contrary, the others have argued that dreaming is not exclusively a right hemisphere activity, based on his observations of aphasic patients who report a loss of dreaming. Some authors maintain that the deep structure of dreams reveals syntactical rules that are analogous to a linguistic grammar. Luria's clinical observations shows that the left hemisphere plays a decisive role in the construction of dream images.

In this theoretical discussion possible hypothesis will be:

Hypothesis 1: verbal language in dreams is unilaterally represented in the right hemisphere.

Hypothesis 2: verbal language in dreams is unilaterally represented in the left hemisphere.

Hypothesis 3: verbal language in dreams is unilaterally represented in the right hemisphere in some individuals and in the left in others.

Hypothesis 4: verbal language in dreams is bilaterally represented. Two variations are as follows.

Hypothesis A: verbal language in dreams is bilaterally represented with symmetric contributions of the two cerebral hemispheres.

Finally, our Hypothesis B will be: verbal language in dreams is bilaterally represented with differential contributions of the two brain hemispheres.

ACOUSTIC CHARACTERISTICS OF CROATIAN CARDINAL VOWEL FORMANTS (F1, F2 I F3)

Gordana Varošaneć-Škarić, Iva Bašić

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It is usual in forensic context to measure formant values (F1, F2, F3) in speech. Formant values in previous research were measured in nonsense words or in several phonemes, therefore the aim of this paper was to determine standard values for Croatian Received Pronunciation (RP) for male (N=14, mean age 33) and female (N=14, mean age 30) speakers in words. The results can be used for comparison with vowel pronunciation in dialects and idiosyncratic variations or with vowel

pronunciation in telephone transmission. 10 two-syllable words with different phonetic contexts were chosen for every vowel; every vowel was in stressed position with each of the four Croatian accents and the words were pronounced with falling intonation as statements. F1 and F2 values were presented through vowel space chart indicating the distance between vowels. The average formant values were measured in Praat program and also standard deviation, minimum and maximum formant values (Hz). The results were compared with previous acoustic findings especially for F1 and F2. As expected, the highest F1 value was found for vowel [a] (835 Hz for female speakers and 707 for male speakers), it was confirmed that the front/back position of vowel influences F2 values: the most fronted vowel in Croatian is [i] and it has the highest average F2 value (2375 Hz for female speakers and 2177 for male speakers). It was also confirmed that for F1 values the most important is pharyngeal resonance and resonance in the back part of oral cavity since due to the contractions in those areas vowel [i] has the lowest values while the most resonant vowel [a] has the highest values. F3 values will be important for comparisons of various vowel pronunciations since F3 does not distort in telephone transmission or shows less distortions than F1 for most vowels.

Key words: vowels, formant values, Croatian Received Pronunciation

NOW OUR BRAINS GIVE US EVEN MORE TO SAY!©2015

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In our first paper *My Brain Just Did Not Give Me Anything To Say!* at Patra, Greece in 2006 we presented significant brief theoretical hypotheses on brain and speech development from Joseph Chilton Pearce, Alfred Tomatis, Noam Chomsky, Tom Bower, Carl Pribram and Bruce Lipton. We also shared the Prebirth source of speaking challenges for Troya and myself. In 2008, in Sofia, Bulgaria Olga Gouni read our paper *Now Our Brains Give Us Something To Say!* in which we presented how our brains had developed Whole-Self Prebirth Psychology as illustrated by the Case Histories of both ourselves and Whole-Self Co-Directors Olga Gouni, Smilja Janjatovic Pugliese and Maria de Leon Crowhurst. Now, at this 5th Congress in Belgrade, Serbia in 2015, in what has become a trilogy, we present some Media Coverage and Clinical Resources especially the work of Barbara Arrowsmith-Young of Canada who appeared on BBC Television talking about her early years with the same verbal communication hearing and speech learning disorders Troya and I had and how she pioneered in rebuilding her brain and then established schools in Canada and the USA to teach these techniques to children who had been declared learning disabled. We link to how Troya and I overcame our learning deficits by developing Whole-Self Prebirth Psychology, Philosophy and Education; that it is safe to speak what comes up in the here and now as long as we allow ourselves to welcome additions, corrections, etc. When doing so, we grow, develop, mature and evolve every moment as a Whole-Self.

THE CONTRIBUTION OF PRENATAL PSYCHOLOGY TO OUR UNDERSTANDING ABOUT PRENATAL DYNAMICS AND FETAL BEHAVIOUR

Olga Gouni

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Research in the prenatal human experience has very clearly shown that whatever mother experiences all her life until conception and even more impactfully during conception and pregnancy passes down to the child she is pregnant with. Modern Biology has shown that environmental information and the perception that governs this environment gets encoded in the cell consciousness.

A simple thought or act can upset or stabilize the whole planet or... fetal existence. Subtle differences in the motivation of our choices may have the power to bring about radically different conditions in the process of events. A simple thought of fear can lead to a trauma, a disease, a holocaust while a simple thought of compassion can take humanity out of the platonic cave into the healing light of creation. Is there anything we can do? Can we learn from what we already know about prenatal dynamics and move on to design and implement salutogenic processes for the benefit of all involved?

The paper will attempt to show the most important findings about prenatal dynamics and fetal existence and how they are connected with our postnatal health and wellbeing from the times of Freud and especially his students who took psychoanalysis from the childhood to birth experience and then to pregnancy and conception and beyond

WORD, MAN AND THE COSMOS

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"People's abilities are very big. You can't imagine even a pale shadow of what man is able to achieve"
- George Gurdjieff

The work represents a pilot study with aim to have a deeper look at the power of words.

Word is, at the same time, an instrument of creation and the exquisite creation, and the Lord gave it only to a man, for him to further create. A man must finally find out that he creates his life and therefore affects the life of others with his thought and words and he is in co creator in final Cosmic creation.

Looking at the results of Djordje Kostic's research, about phonological structure of Serbian language, we can get a clear insight that there is regularity by which the voices in one language 1) often come into contact and build clusters that have high frequency in words, 2) rarely come into contact and build clusters with a lower frequency words, 3) voices that never get in contact and do not build clusters rarely occur (frequency 1) and 4).

Heaving in mind the views of the new neurolinguistics, that every word has its own outer and its internal value, ie., the word apart from its external communicative meanings, has internal value through energy content contained in its levels of spiritual, astral and material codes. We have conducted pilot research on brain processing during sound stimulation of certain frequencies, which are immanent word codes on a spiritual level.

This pilot research part will present results of speech and language analysis of processing code words of selected stimulus, expressed with acoustic frequency, using quantitative EEG, in a situations of synchronized sound stimulation and dichotomous listening. The results show possibility of applying a certain code words expressed in the acoustic frequency for therapeutic purposes, such as the frequency of 69hz (acoustic frequency spiritual code words Serb), which has a very calming effect on children with ADHD, concentration and attention disorders, memory, and behavior and learning disorders.

Keywords: cluster voices, speech, language, space, man, acoustical structure, word, behavior disorder

INTUITIVE MODEL OF TIME IN CHILD LANGUAGE ACQUISITION

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The focus of this paper is the intuitive model of the category TIME extrapolated in children's lexicon. The most important characterization of time is that it is not a static, but a dynamic and variable value, because during the observed age (from 3 to 6 years) it is still in a process of establishment and development and the language itself acts like an assisting mechanism within this process. In this context the problems connected with the lexical conceptualization of time stand out as particularly interesting: on the one hand, they are a result of the cognitive immaturity, while on the other, of the linguistic attempts of the child to express the complex temporal relations in the *concepts of „nursery“*, i.e. in the *children's naïve worldview*.

Due to space restrictions, this paper, which is based on material from Bulgarian language, analyses only certain features and regularities of general specificity and of the some specific patterns of acquisition of lexical means for the conceptualization of time. The study aims to illustrate the concrete time parameter on the basis of empirical data, obtained from recordings of spontaneous speech produced by 5 Bulgarian children and through a psycholinguistic experiment with 90 children in the age range of 3 to 6 years, as well. In order to achieve a higher level of psychological adequacy and reliability of the conclusions, there has been added an analysis of the free verbal associations of the words „morning“ and „night“ made by 100 6-year old children (see „Dictionary of Associations“ in V. Popova, DEVELOPMENTAL PSYCHOLINGUISTICS: COGNITIVE ASPECTS OF SYNTACTIC COMPETENCE [Bulg.] -https://www.academia.edu/3770417/DEVELOPMENTAL_PSYCHOLINGUISTICS_COGNITIVE_ASPECTS_OF_SYNTACTIC_COMPETENCE), which additionally specify the conception of the intuitive model of time category in the late Bulgarian pre-school children's language).

Key Words: Intuitive model, category TIME, children's lexicon, Bulgarian language

OBJECTIVE APPROACH TO THE ACOUSTIC CHARACTERISTICS OF STRIDENCE

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Stridence is a form of speech disorder in Serbian language. It is one of the specific forms of deviations that occur in the articulation of fricatives and affricates generated in the mouth when the position of the tongue in relation to the palate and teeth is irregular. In acoustic domain is manifested by the appearance of an intense, sharp sound *similar to whistling*. The acoustic characteristics of stridence significantly deteriorate the quality of verbal communication. In this paper, an objective approach to the acoustic characteristics of stridence is presented. An algorithm for stridence detection based on the auditory model is described. The reliability of stridence detection is tested on the speech corpus that consisted of speakers without stridence (with correct speech), speakers without stridence but with other form of speech disorders, and speakers with stridence. The results showed high accordance of expert and automatic approach.

FUNDAMENTAL AND APPLIED ASPECTS OF SPEECH PROFILING

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Speech activity represents a conglomeration of specific features of the person which manifest themselves in the flow of speech through many anthropophonic features, pronunciation habits, and the way how people think and speak. Speaker profiling as fundamental aspect of forensic phonetics is the use of deductive reasoning to reach logical conclusions about a person based on his or her speech and

language patterns as epiphenomena of cognition. The investigation of the notion speech profile here is mainly connected to the idea of the speech portraits („речевые портреты“ in Russian = “phonetic profiles”) presented by the Russian researcher M. V. Panov when he analyzed the pronunciation of certain persons and characterized the literary norm diachronically, creating a sequence of phonetic profiles (images) The speech profiles are presented here as verbal, paraverbal and extraverbal components and are studied in the field of applied sociophonetics. The article discusses real iconic representations of speech in online performance in the sphere of standard, substandard and nonstandard in contemporary Bulgarian pronunciation, signaled by a combination of different prosodic features manifested in specific aural images. In this research in the course of speaker’s speech analysis they make possible to point out (to emphasize) these illuminated diagnostic spots, which are ranked symptomatic to the speech personality. Thus, the speaking person is unique in the use of specific speech components referring to the own speech code used in the process of communication and so s/he prefer certain stable in use features (preferred and typically used) which represent phonetic and semantic dominants of its verbal repertoire. Such speech features present the possibility for successfully identification of many components of the personal human speech profile. Speech profiling is an unique investigation in characterizing and standardizing of personality on the basis of its specific way of speaking and expressing.

Key Words: applied sociophonetics, speech profiles, prosody, speaking styles, Bulgarian pronunciation, iconicity

INTERSECTION OF COGNITIVE LINGUISTICS AND LINGUOCULTURAL STUDIES

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This paper investigates the relation between the two modern linguistic approaches, which study the relationship between language, thought and reality, namely cognitive linguistics (which emphasizes the relationship between language and cognition), and linguocultural studies (deals with relationship between language and culture). These both stuides originated at the end of the twentieth century and have a certain autonomy, but also they inevitably intertwined.

VALIDATION OF CROATIAN VOICE HANDICAP INDEX

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Short, self-report symptom questionnaires are often used in clinical setting for assessing patient’s perception of voice problems or to monitor the efficacy of the treatment. Voice Handicap Index is a questionnaire developed in the USA for self-assessment of voice difficulties. Aside from American questionnaire, there are several VHI adaptations in Europe (Dutch, Flemish, British, French, German, Italian and Portuguese) compared in several previous researches. The results confirm validity of all questionnaires and are considered appropriate for cross-linguistic comparisons. Also, adaptations for pediatric use and for singers were also developed supporting the quality and practicality of VHI and indicating the necessity for validation of the questionnaire for special groups. Therefore the aim of this paper was to make Croatian adaptation of VHI and validate it for general population but in groups of vocal professionals. This research included several groups of vocal professionals with frequent voice problems: actors, anchors and journalists, teachers, coaches, and kindergarden teachers. Statistical analysis indicated high levels of reliability and validity and also sensitivity of the VHI questionnaire. Controls (general population) showed lower results than voice professionals for the entire questionnaire and on each scale (functional, physical and emotional) confirming the validity of VHI. It can be concluded that Croatian VHI is valid and reliable measure for use in Croatian clinical context and for coparison with similar research.

Key words: voice, VHI, disorders, self-assesment

PRONUNCIATION AND PHONOLOGICAL VALUE OF K' AND G' VOICES IN CONTEMPORARY MACEDONIAN LANGUAGE

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The subject of analysis of this article shall be the phonological and phonetic value of the \acute{K} /C/ and \acute{G} /J/, which, in the Macedonian grammar, are defined as affricates and occlusive, while also comprising a whole range of phonetic realizations in the Macedonian colloquial speech. This variety is a consequence of the difference in realizations in the dialects, as well as influence from the neighboring languages, especially Serbian and Croatian. This different pronunciation has an impact on the written form as well, where a mix with the voices K and G can be noticed, including the affricates C and DZ. The analysis will also take into consideration the different spelling solutions for \acute{K} /C/ and \acute{G} /J/ in the borrowers of Greek and Turkish origin which, even in intellectual layers of society, can pose a challenge with their spelling.

Key Words: K' and G' Voices, pronunciation, orthography, impacts, improve.

COMPONENT-BASED PROGRAMMING FOR SPEECH AND LANGUAGE PATHOLOGISTS

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Many non-programmers simply do not have the deep mental representations of technical concepts necessary for application development. Although it might seem that including them in programming won't show any results, there is a realistic chance for the opposite. This fact is very important when deciding on the level of support and guidance which will assist in programming of end users without programming experience who wish to engage in the development of their own applications programs. The current implementations of technology for application development are at odds with the expectations of end users and create tremendous obstacles at the outset. To overcome those barriers, it is necessary to design tools that will be similar to the natural thought processes and the mental representation of end users/non-programmers. In this paper, the target category of non-programmers is speech and language pathologists (SLPs) without programming experience who want to create their own therapeutic applications. In this paper, I will present a model of user interface software development environment suited for SLPs, as a result of the study that combined analytical research solutions that are currently being offered with detailed empirical research of needs that SLPs have, and existing programming paradigms in the field of software engineering.

This work shows that the complexity of programming by the SLP can overcome by offering components with a high level of functionality, presenting technical concepts which are close to mental models of SLPs, and integrating all aspects of the tools necessary for the development of therapeutic software.

Key words: Component-Based Programming, Speech and Language Pathologist, Therapeutic Applications

UNIVERSAL CONSCIOUSNESS IN NJEGOSH'S PO (I) ETHICS

Miloje M. Rakočević

The work is a continuation of our researches, carried out during the last two decades, on the general theme "Universal consciousness in the understanding of the universal code". It is the understanding of consciousness as a kind of relation to the object, when it becomes aware of the essence of *things-process-phenomenon*, in the sense of (and finding) that this and such a consciousness manifested in different eras, in different generations of artists through the centuries and millennia. In Njegosh's

words, it is the awareness of the existence of "a general accordance" in the overall reality, especially in the creation of Nature and the creation of *man-creator-artist*.

On a particular plan, this work addresses to the Njegosh's "general accordance", not just as a philosophical attitude, but also as an essential characteristic of his poetics; as he expressed in his poetry (as the "son of nature – the poet, Creator the small, close to the God"), but also in his letters ("As the substance of mind of the Creator, I so do, all to be agreed at a general imitate"; "He [the poet] sees the great list of the book of world as open, and reads in it the wonders of the great Creator"). In the program song *Thought* Njegosh addresses him directly to the thought: "Hey the thought priests and mine, you have a property with the Father of the world", and says that it is "in a small circle of" the ideal thing, the same model, by which the Creator "a plan of Essence makes". As "a general accordance" *per se* and *ipso facto* involves the creation and creativity in its, the paper necessarily speaks about poiesis (ποίησις) and autopoiesis (αὐτοποίησις) as determinants of both.

Introduction to the mythological story of the CENTAUR HEIRON, THE WOUNDED HEALER

by Altani

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Greek title of the books «ARRHTOI LOGOI»)

In ancient Greek the names of the gods, the heroes and the monsters contain the meaning of their main features, as Plato in his dialogue *Kratylos* points out.

The main characteristics, not shown in the etymology of the dictionaries and mythology, is being unveiled using the same letters of the names by

- a. Interchanging the sequence of the letters.
- b. Changing the sequence of the syllables.
- c. Dividing the word in two or more parts, if necessary.
- d. Using the first letter as a pilot for the meaning of the word.

The words we utter have no longer a conventional meaning, by which we understand each other's thoughts, but contain one or more ideas of the pronounced name given by the word. A conventional word without intrinsic properties cannot explain the true nature of its contents.

First example: Chiron/Heiron is a C e n t a u r. Both centaurs and Heiron are very important archetypes of Greek Mythology, which have the image of a monster. The image of a Centaur shows the upper part of the body as the man's head, torso and hands; the lower part shows the body of a horse.

The image transfers the optical sense to the brain's cortic in order to understand its metaphor. The upper part is the logic of the human being, whilst the lower is overwhelmed by the feelings and the instincts, which the lower body imposes to the upper, that is the strong unreasonable, illogical will to the weak logic.

Being divided in two parts, the Cent - aur, c e n t - and a u r(a)/soul is the c e n t - r a l trauma of an incurable wound, because the c e n t e r of the soul/a u r a is torn apart. Feelings and instincts against logical thinking are in constant struggle. This is the meaning of the Centaur's pathology.

Second example: The Centaur H E I R O N, the Wounded Healer, should not be written as C h i r o n, because it destroys the archetype. The pronunciation in English changes the true sense of the hidden essence. The Greek archetype, if not correctly understood, does not lead to the right conclusions.

What are the prenatal wounds in Heiron's evolution, which embrace all humanity?

- a. The loss of love and care from the abandonment of both parents, the father Saturn (Kronos/Hronos in Greek) and the nymph mother Phylira.
- b. The injustice inflicted upon the soul/aura, which does not deserve the unfairness of a miserable life without having ever committed any crime.

During the period of pregnancy the embryo Heiron absorbs all the impressions, thoughts, feelings, pain, agony of his mother's abuse and rape. The soul of the embryo when born is a revolted human being torn between hatred against society and injustice felt deeply without hope for a lifetime.

It should be noted that justice and not love affects all human souls on earth on both hemispheres, reaching the deepest core of the human consciousness.

How could justice be restored in the wounded rejected soul?

The answer lies in the name of Heiron and is being supported by the name of god Apollo, who adopted Heiron.

Apollo is the sun god of healing and enlightenment, showing the way to the soul, in order to reach the highest realms of Justice.

Justice lifts the soul to the summit of Olympus, to the Olympian god of gods, Zeus, the father of Apollo, far away and above the essence of love, pain and fear.

GLOBAL APPROACH IN REHABILITATION OF HEARING, SPEECH AND LANGUAGE OF A CHILD WITH DOWN SYNDROME – A CASE STUDY

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Down syndrome is one of the most widespread genetic disorders with the overall incidence estimated to be 1/600-800 live births. Atypical development in children with Down syndrome can be seen on different levels such as physical, mental, socio-emotional, cognitive, speech and language, sensory motor etc. In this paper the rehabilitation of a girl with Down syndrome included primarily in early intervention procedures in an education center is discussed. The descriptive analysis used in this paper focuses on: a/ atypical elements in speech and language as well as insensory motor development; b/elements of early intervention procedures used during rehabilitation that are also used in verbotonal method. The results of the analysis are consistent with earlier findings confirming therefore the differences of the child's development of speech and language as well as sensory motor level compared to normal development of a child. Spatiality (with movement as the most prominent of all elements) and structure proved to be the unavoidable parts of global approach to the child in rehabilitation which is common to both early interventions and verbotonal method. The authors finally suggest some of possible further procedures in rehabilitation of the child based on verbotonal method. Few guidelines on adjustment of school material for personal assistants and teachers of children with Down syndrome are given since the tendency is to include most of the children with Down syndrome in regular educational system.

Key words: hearing, speech, language, movement, global approach, verbotonal system, early interventions, Down syndrome

HOWLING SUPPRESSION IN DIGITAL KSAFA USING ADAPTIVE FILTERING

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Howling is a significant problem in electro-acoustical devices where signal from microphone is amplified and reproduced on speaker or headphones. It is caused by unwanted crosstalk between the speaker (or the headphones) and the microphone. The Crosstalk limits the total amplification of the system that can be safely used without a risk of the system oscillation. In the hearing aids, the transfer function with emphasized peaks increases the risk of oscillation. Hence, it additionally limits the options for the hearing aid transfer function. Howling problem is also present in the KSAFA device (Kostic's selective auditory filter amplifier), where unexpected howling can disturb the patient and have negative influence on speech therapy. The technique which is considered to be the most efficient in howling suppression is adaptive filtering. Acoustic feedback cancellation by adaptive filtering, however, encounters the problem of correlation between input and output signals. The result is misconvergence of the adaptive filter. Several techniques have been proposed to decorrelate these two signals such as introduction of additional delay, frequency shifting, phase shifting, and howling detection combined with gain reduction. In this paper adaptive filtering is analyzed for a several different methods of input-output signals decorrelation. These methods are tested on KSAFA model simulated in MATLAB with a transfer functions typically used in speech therapy. The transfer

function of acoustic feedback between headphones and microphone is estimated from actual measurements conducted in quiet room. Assessment of the obtained signal quality was conducted by two trained speech therapists and two acoustical engineers. Based on the subjective evaluation of experts and objective assessment we selected the most suitable solution for KSAF-m device. It was shown that the proposed adaptive filtering method achieves a considerable improvement both in terms of the maximum stable amplification level and the quality of reproduced signals.

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MANIFESTATION OF LATERAL SIGMATISM IN SPECTRAL DOMAIN

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Lateral sigmatism most often occurs in the pronunciation of fricatives (*/z/*, */ž/*, */s/* i */š/*) and affricates (*/c/*, */č/*, */ć/*, */đ/* i */dž/*). This type of sigmatismus appears due to incorrect routing of air stream in the oral cavity which flows at the edges of the tongue. Different flow manifested as air friction, leads to changes in the spectrum of spoken fricatives or affricates. The analysis of normal fricatives / affricates pronunciation and pronunciations of these phonemes with lateral sigmatismus point to differences in the high-frequency part of the spectrum. The cutoff frequency is in the range 3-6 kHz. The biggest differences in the spectrum are found above this critical frequency. The typical speech treatment for children with different types of sigmatismus is based on the correction by properly setting the articulation organs with emphasis on the individual phases of critical phoneme pronunciation. Recent trends in speech treatment include the use of computer-oriented programming tools, which enable visually assessment of the spoken phonemes quality. The paper presents pilot study with the example of lateral sigmatismus. Research results show that the spectral characteristics of regular fricatives / affricates pronunciation are significantly different in relation to atypical pronunciation of the same phnemes. These spectral differences can be used to create a dedicated software tools that will help the speech therapist in his work but also it could be used by children in individual exercises for pronunciation of critical phonemes.

Key words: sigmatism, children speech, africate, fricative, speech and language therapist

MAXIMAL VOWEL SPACE AS INDICATOR OF ATYPICALLY ARTICULATION ORGANS DEVELOPMENT

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In prelingual stage of child development, there are few opportunities for qualitative assessment of the speech apparatus development. One of these opportunities is estimation of the maximum vowel space, or more generally speaking, range of vocal tract resonant frequencies. There are correlations between the physical shape of vocal tract and its resonant frequencies so that the movement of articulation organs can be monitored by analyzing these resonant frequencies. Increased mobility of articulation organs involves greater dynamic range of resonant frequencies. Along with monitoring the dynamics of the vocal tract resonant frequencies, the fundamental frequencies can be also monitored, i.e. the

range of the vocal cords vibration. An even better option is estimation of the phonetogram that shows the dependence of the relative voice levels in function of voice fundamental frequency. These three parameters: the resonances of the vocal tract, the speech fundamental frequency and the relative level of the voice are good parameters for the detection of atypical children speech, especially in prelingual phase. The paper shows the difference in resonant frequencies of the vocal tract and phonetogram for the control group of children and for the group of children who have speech difficulties. Based on these differences, the criterion for the detection of atypicality in the development of children's speech apparatus in prelingual stage can be defined.

Key words: articulation, children speech, maximal vowel space, phonetogram, vocal tract

BASIC ELEMENTS OF FUNCTIONAL LITERACY IN YOUNGER STUDENTS

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Functional literacy is the ability of successful written communication in everyday life. It is taught in mother tongue classes throughout the schooling and it is especially important while practicing writing. Literacy is evolving in different ways, and the aim is the student gradually become independent and write independently. The aim of this study is to examine the theoretical and methodological aspects of functional literacy and finding adequate ways in which this type of communication develops in younger students. The paper analyzes the knowledge and use of various basic elements of functional writing skills in students. This covers reading comprehension, spelling norms, writing sentences and short texts, methodology in written composition and writing nonlinear texts. They also represented the functional aspects of written expression in students, and: written answers to questions about a literary text, a short report about an event, writing informative texts, filling in forms and tables, writing compositions. It is particularly discussed the use of computers with two aspects – as a modern means of writing and means for collecting material for expression. All these segments are intertwined and form the basis of functional literacy in students. The shown results are for three hundred teachers (N=300) on basic elements of functional literacy. They spoke about these elements and about their usage in various forms of written expressions in students. The research results were considered in development of functional literacy in younger students.

Key words: functional literacy, methodology of writing, student's text, nonlinear text, informative text.

REGIONAL EEG COMPLEXITY CHANGES IN AUDITORY-VERBAL SHORT-TERM MEMORY TASK FOR WORDS AND NONWORDS: SAMPLE ENTROPY ANALYSIS

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Introduction: The electrical activity in brain regions with high temporal resolution is measured by the electroencephalogram (EEG) which points to possible underlying cognitive processes. There are many studies investigating memory load effect using linear methods of EEG time series analysis, but there is a lack of nonlinear approaches.

Objectives: The objective of this study was to quantify changes in complexity of electrical activity in different brain regions due to a memory load effect in an auditory-verbal short-term memory (AVSTM) task for words and nonwords using sample entropy method.

Methods: We examined 20 healthy individuals using the Sternberg's paradigm with increasing memory load (three, five, and seven words/nonwords to be remembered). The stimuli were four-letter

words (nouns and adjectives) and nonwords which were matched in length. Artefact free five-second EEG segments during retention period were analyzed using the sample entropy (SampEn) method.

Results: An increase in SampEn was found due to increase in memory load for both words and nonwords, but in different brain regions. The AVSTM word task induced an increase in EEG complexity in central and posterior regions, compared to the nonword task. An opposite finding was seen for nonwords task, which induced higher EEG complexity in anterior regions compared to words.

Conclusions: EEG expresses more complex dynamics with more demanding task conditions. The SampEn as a nonlinear measure shows potential to quantify changes in electrical brain activity in different AVSTM tasks.

THE IMPACT OF LEARNING AT WHISPER PRONUNCIATION QUALITY

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Whisper is a form of speech, which often occurs in different communication situations. Question of pronunciation quality is rarely asked because of specificity of communication situation. Whisper is defined as pronunciation without vibration of the vocal cords. This leads to the conclusion that all voiced sound should be classified as incorrectly spoken sounds if we take criteria for typical speech.

In this study two problems were taken in consideration: a) criteria and abilities of experts to evaluate quality of pronunciation and b) the impact of learning at whisper pronunciation quality. The study included 10 "Naive" speakers who pronounced defined set of stimuli several times during one month, and two experts from which one has perennial experience in whisper analyzes and the other one in typical speech evaluation.

It turns out there are problems in defining criteria that are used to describe voices pronounced in a whisper and that trained professionals have trouble when they need to adapt their perceptual criteria, that are already formed for typical speech, to whisper. It comes to their perceptual criteria

Trained for assessing the quality of a typical speech adapt whisper. Although whisper is relatively common way of communication exercise is improving the quality of pronunciation. The results indicate the need for more serious approach in preparing speakers when whisper is used for speech researches.

OPTIMAL RESAMPLING OF IMBALANCED DATA: SPEECH PATHOLOGY DETECTION

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The paper presents the theoretical and experimental aspects of the benefits of a new method for balancing of unbalanced classes based on the estimation and guided modification of density of instances in the feature space. Theoretical foundation of this method lies in maximization of entropy of the training sample. The generality of the method guarantees its applicability in the cases of various complexities and dimensions of data. Mentioned theoretical basis of the method was proven on the synthetic set of data and its practical usability is confirmed on the empirical set of data (phonemes) through the assessment of the quality of their articulation.

Keywords: Density, imbalanced learning, nearest neighbours, neural networks, speech pathology, phoneme

AUDITORY INFORMATION PROCESSING IN CHILDREN WITH SPECIFIC LANGUAGE IMPAIRMENT EXAMINED BY EEG CARTOGRAPHY

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Research aim was to examine the auditory information processing in children with specific language impairment by EEG cartography. Method: Research sample was divided into two groups: Experimental 1 group (E1=8) consisted of children at the age from 3-4 years, who have expressive and receptive language disorder (F80.1 et F80.2), while Experimental 2 group (E2=8) consisted of children who have only expressive language disorder (F80.1). All examined children are on continuous speech and language treatment in Institute for experimental phonetics and speech pathology in Belgrade, where the EEG cartography was performed. Cartographic EEG patterns were performed on Nihod Kohden Corporation, EEG – 1200K Neurofax apparatus in longitudinal bipolar electrode assembly schedule by utilizing 10/20 International electrode positioning. Recording was performed in a quiet period and during auditory stimulation and it lasted 3 minutes for each examined period. Auditory stimulation consisted of listening the story talked by unknown female person. The following rhythms were analysed: Alpha1 (8-10 Hz), alpha 2 (10-12 Hz) and beta (15-20) rhythm. Research results showed that children in E1 group – with both expressive and receptive language disorder, have processed complex auditory information by slow alpha activity (α_1) and by activating ~beta learning~ (15-20 Hz) in perceptive regions. In contrast to E1 group, children in E2 group who have only expressive language disorder activated fast alpha (α_2) during auditory information processing while ~beta learning~ was registered in prefrontal and frontal regions. The relationships between examined rhythms and certain regions' functions are discussed in the paper.

Key words: EEG cartography, auditory information processing, specific language impairment

ONSET OF SPEECH IN CHILDREN WHOSE VESTIBULAR FUNCTION WAS TESTED AT BIRTH

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Absence of vestibular information early in life can lead to reduced cognitive performance in several domains. The aim of this paper was to determine the beginning of speech activity in children whose vestibular function has been tested immediately after birth. The study sample was comprised of N = 54 children aged 11 months to 2.2 years. The group of reflexes related to the function of the vestibular sense was examined in newborns the third day upon birth. Parents of tested respondents at birth, were asked to apply for re-examination when their child utters the first meaningful word that marks the beginning of speech and language development. The data about the onset of speech activity were correlated with the results of tested vestibular function at birth. Research results indicate the existence of a statistically significant correlation between the level of vestibular senses development at birth and the age at which children begin to speak.

Keywords: vestibular function, newborn, commencement of speech, child

Acknowledgements: This research study was supported by the Ministry of Education, Science and Technological development of the Republic of Serbia within the project no. 178027.

HEARING EVALUATION IN CHILDREN WITH ARTICULATION DISORDERS

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Articulatory accuracy depends on the regularity of phoneme perception and of the developmental level of articulatory and phonatory mechanisms (Kostic, Vladislavljevic, 1995). Discreet and minimal disruption of auditory perception at early age can lead to articulation disorder. Methodology, that is applied in treatment and in correction of articulation, is of great importance both for the length and the effects of treatment, particularly in terms of developing abilities that can later affect the adoption of school skills.

The aim of this research was to examine the auditory perception in children with disturbed articulation.

The sample comprised of 22 children aged 5-8 years with disturbed articulation and 20 children of the same age with normal speech-language and hearing development. The research was conducted by using: Impedancemetry, tonal audiometry, TEOAE, DPOAE and speech audiometry.

Obtained results indicate that children with articulation disorders show worse results in all applied methodological procedures in relation to children with normal hearing and speech development, but obtained differences were not statistically significant.

Key words: auditory perception, articulation disorder, normal speech-language development, impedancemetry, tonal audiometry, TEOAE, DPOAE, speech audiometry.

COGNITION, BEHAVIOUR, LEARNING, SPEECH AND LANGUAGE: THE STUDY OF STUDENTS WITH MNEMONIC DIFFICULTIES.

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In our study, we seek special educational significations identified with cognitive and biological deficits may be involved with specific learning difficulties (dyslexia). The object of this study focuses on the Cognition, Behavior, Learning, Speech and Language skills of students who have been diagnosed with specific learning difficulty in reading and mnemonic outside the University.

The problem of reading was the main case and investigated in relation to the mnemonic skills and levels of difficulty in the study of the course.

The primary objective seeks to provide an eclectic and updated material on the research field of special education, which took place during the last thirteen years at the Agricultural University of Athens. Data are derived from participatory observations in interactive workshops to mnemonic techniques, and special educational interventions on individual study plans of students with dyslexia. The theories of dyslexia are understood in a way that they describe, measure and interpret editing, memorization and cognitive organization of information. The differences and divergences identified the difficulties identified in the import, processing and production of reading meaning. Dyslexia can impact on all areas of learning at all educational levels despite compensatory teaching strategies used to control the special learning difficulties. The characteristics of dyslexia include more elements from the report on the mechanism and process of reading operation.

The results found high correlations between the factors of reading proficiency, degree of difficulty to the mental processes with emphasis on Cognition, Behaviour, Learning, Speech and Language skills. With awareness of the limitations of research on dyslexia in Higher Education (Anderson, & Onens, 2012), the discussion focused exclusively on people with lower reading skills in this work.

Keywords: dyslexic students, reading, mnemonic techniques

EEG CORRELATES OF NON-VERBAL TRANSPERSONAL HOLISTIC PSYCHOSOMATIC COMMUNICATION

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The subject of this paper are EEG correlates of non-verbal psychosomatic communication in novel transpersonal holistic diagnostics and healing, applied to the pilote group of 30 volunteers with some psychosomatic problems. In this pilote group, EEG changes were monitored and analyzed during the resting period, during the period of holistic diagnostics, and during the period of holistic treatment – in order to get data about central nervous system excitability during these periods; also, a health state questionnaire is organized in order to collect data about how participants perceive different areas of their well being. The obtained results might be interpreted in terms of non-verbal transpersonal holistic psychosomatic communication, revealing holistic interaction of acupuncture system / consciousness (of healer) and central nervous systems (of volunteers). This might be of significance for novel holistic prospects in improvement of verbal-emotional-cognitive development of children and their psycholinguistic functions, and of psychosomatic-cognitive status of children and adults.

Keywords: non-verbal holistic psychosomatic communication, transpersonal holistic diagnostics and healing, EEG measurements, EEG analyses, health state questionnaire, prospects for improving verbal-emotional-cognitive development.

AUTISM AND GASTROINTESTINAL DISORDERS

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Gastrointestinal (GI) disorders are among the most common medical conditions associated with autism. These issues range from chronic constipation or diarrhea to irritable and inflammatory bowel conditions. They can affect persons of any age. But in the context of autism, they have been most studied in children. Eating and feeding problems, most commonly food selectivity or picky eating, are common among children with ASD. While these behaviors are typically addressed through occupational or behavior-based therapeutic approaches, increasing evidence shows than in many cases, such eating and feeding problems may be organic and stem from some form of underlying gastrointestinal dysfunction. This review highlights the literature on eating/ feeding problems in children with ASD, as well as the contributing factors to eating problems and their nutritional implications in this population. In addition, the various manifestations and origins of gastrointestinal dysfunction in ASD are included. This review suggests a strong relationship and significant correlations between eating problems and gastrointestinal dysfunction. There is growing evidence that nutritional therapy can really make a big difference to children with autism. Many have severely disrupted digestion, so restoring balance in the gut is a key focus for nutritional therapy. Also important is balancing blood sugar, checking for brain-polluting heavy metals, excluding food additives, identifying food allergies and possible nutrient deficiencies, and ensuring an optimal intake of essential fats.

Key words: autism spectrum disorder, gastrointestinal disorders, nutritional therapy

ELECTROMAGNETIC FIELDS AND SPEECH PROBLEMS

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Non-ionizing radiation absorption by the population increased many times in the last few decades. The health effects of this will show a dramatic impact in the near future. Non-ionizing electromagnetic fields (EMFs) are the fastest growing forms of environmental pollution. The “*International EMF Scientist Appeal*” asks the Secretary General and United Nations affiliated bodies to encourage precautionary measures, to limit EMF exposures, and to educate the public about health risks, particularly to children and pregnant women. The *Appeal* requests the United Nations Environmental Programme (UNEP) to assess the potential impact of EMF exposure on all living organisms.

Nowadays, mothers are continuously exposed to different sources of EMFs before and even during pregnancy. Wireless and radio communication, power transmission, or devices in daily use such as smartphones, tablets, and portable computers every day expose mothers and their children to electromagnetic pollution.

Mobile or cell phone radiation exposure during pregnancy impacts fetal brain development and may cause many disorders or diseases. There is a correlation between prenatal and postnatal exposure to mobile phones and neurobehavioral problems in children and adolescents. It has been shown that exposure to mobile phone radiation during pregnancy may lead to adverse effects on the brain development in offspring and cause many neurobehavioral problems including attention deficit-hyperactivity disorder (ADHD). Mobile phone harmful impact on pregnant women abdomen has postnatal children’s health effects: hyperactivity, diminished memory, reduced anxiety - symptoms associated with ADHD. Studies showed a significant association between exposure parameters of mobile phones such as the call time or history of mobile phone use and the occurrence of speech problems in the offspring. Although autism spectrum conditions are defined behaviorally, they also involve multileveled disturbances of underlying biology that find striking parallels in the physiological impacts of EMFs, particularly radiofrequency exposures.

ACOUSTIC CHARACTERISTICS OF THE VOWEL A AT PATIENTS WITH ACUTE LARYNGITIS

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In this study we represent results from the acoustic characteristics of voice in patients with acute laryngitis by applying the most advanced laboratories for acoustic analysis of voice "Computerized Voice Laboratory", the company "Key Elemetrics". This paper describes the methods used for the quantitative assessment of these periodic functions. They were used to calculate the statistical characteristics of these functions, which can be useful for assessing voice in the scientific and clinical practice. It has been calculated seven acoustic parameters. This set of parameters corresponding to the acoustic model, a multidimensional assessment of voice quality. The study included nine female subjects, aged 20 to 30 years. Of these, 5 patients were 20 to 25 years old, and 4 patients were 25 to 30 years old. The first aim of this study were a detailed analysis of the acoustic structure of the vowel A in patients with acute laryngitis and string variables acoustic characteristics typical voice for these people. Also, the aim was to examine whether there is a statistically significant difference in the acoustic characteristics of voice in patients with acute laryngitis and those values which are determined in the normal population.

Keywords: laryngitis, voice, acoustic characteristics

TRANSSOUL COMMUNICATION

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1. Decoding the language of the soul

1.1. Regresotherapy as a tool for decoding the language of the soul

How to recognize the language of the soul, its manifestation and revelation through past-life experiences

1.2. Manifestation of the language of the soul in daily life

Dreams, intuition, precognitive experiences, spontaneous memories of previous lives in children and adults.

Evoked memories of previous lives in adults: meditation, hypnosis, psychedelic substances, different forms of experiential therapies.

2. The healing potential of past-life experiences

2.1. Healing of fears, phobias, traumas, physical disorders which do not have causal link to present life. Solving of difficult symptoms which cannot be treated successfully by psychotherapy or conventional medicine.

2.2. Awakening of soul memories and integration of forgotten knowledge, abilities and skills

2.3. Awakening of unconscious habits and behaviour as the metaprogram that filters the flow of information

3. Radical inner transformation and raising to a new level of consciousness

3.1. Integration of experiences and transformation of strategy of life

3.2. Influence of past-life regression experience to a present life, and expanding of quantum of consciousness

Facing the fear of death, deep positive transformation and evolving of consciousness.

Radical opening towards universal, but non-religious spirituality.

4. Conclusion

Death and life – an illusion of limited consciousness

NEW STRUCTURAL ANALYSIS OF THE SERBIAN LANGUAGE AS A PRIMORDIAL HARMONIC UNIVERSE ASSEMBLY

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Serbian language is an integral part of the Ecumenical code, which contains spiritual information that is of injunction in relation to the astral and physical plane of existence. This system is Ms. Adela Margot in his scientific work presented tripartite system of the universe as a triad - the universe, the solar system and the universe, which have their own existence, and in which we experience our being as a set of spiritual, astral and material level.

Dr. Mirjana Sovilj has examined the entire system assembly frequencies that are important for our sensorial perception of inside and set up as a replica of the creation of the Universe itself.

Milos Grozdanović is combining phonetic assembly of the Serbian language with the harmonic circuit guitar with 24 frets and 144 fields defined harmonic existence of the universe, the cosmos and Space, Gods, Saints, space and time. He thus presented levels of the Serbian Cyrillic alphabet as the Ecumenical primordial code base for a common understanding of the entire system of mental processes of man and his articulation as speech, thought processes, and movement in space.

In this paper they have succeeded in a unique way to acknowledge the works of great thinkers, P.D. Uspensky and Dr. Grigori Grabavoy, and that alone enter in the new space of DNA synthesis through the recognition of the new values of the Cyrillic alphabet.

Keywords: Serbian Cyrillic Letters, DNA, Guitar, Harmonies, Hexagon, Octagon, Fish, Ka

COMPARISON OF GMM/UBM AND I-VECTOR BASED SPEAKER RECOGNITION SYSTEMS

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Over the last few decades, the design of robust and effective speaker-recognition algorithms has attracted significant research effort from academic and commercial institutions. Speaker recognition has evolved to a great extent over the past six decades from discrete vector quantization (VQ) based systems to adapted Gaussian mixture model (GMM) frameworks, and more recently to factor analysis based Eigenvoice (i-vector) strategies. This paper briefly describes and compares both the conventional GMM/UBM and state-of-the-art i-vector based speaker-recognition solutions. The theoretical background of both systems are explained starting from their front-end to their back-end components. Therefore, as a part of front-end component feature extraction procedure was described as well as some commonly used feature normalization techniques such as cepstral mean and variance normalization and feature warping. The back-end component includes development of a Gaussian mixture model (GMM), also known as universal background model (UBM), which represents speaker models' estimation, and speaker-specific models' adaptation procedure using the maximum *a posteriori* (MAP) estimation. On the other side, in i-vector based speaker recognition system, the speaker models are estimated through a procedure called Eigenvoice adaptation. In contrast to GMM/UBM system, which uses acoustic features to represent the test segments, in the i-vector solution both the model and test segments are represented as i-vectors. In the last step of back-end procedure, after speaker models' estimation, verification trials are scored. Finally, this paper also presents experimental evaluation of both systems in MATLAB program, conducted on the CHAINS database composed of 36 speakers, each recorded on a high quality microphone.

Key words: Automatic speaker recognition, GMM/UBM, i-vector, MFCC.

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PREVALENCE OF ARTICULATORY ERRORS AMONG CHILDREN WITH DYSLALIA

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Dyslalia or speech sound disorder is the most common disorder among young children. Dyslalia is pronunciation disorder and it means imprecise or wrong articulation of mother tongue voices. It manifests as omission of certain voices, substitution – when child replaces one undeveloped voice with the already developed other and distortion – when child pronounces certain voice in the way that is not qualitatively satisfactory. During the development child acquires voice pronunciation spontaneously and by the age of five and a half it should be able to pronounce every voice perfectly. Research aim was to estimate standard articulation errors in children with dyslalia at the beginning of speech and language treatment. Research sample included 47 children (13 girls and 34 boys) from which case-history files data were collected. Research was conducted in the Institute for Experimental

Phonetic and Speech Pathology (IEPSP) in the Belgrade. All children were tested with IESPS Tests Battery by qualified speech and language therapist within clinic counseling. Obtained results were elaborated by quantitative and qualitative analysis of the standard articulation errors and were discussed according to error`s type and frequency.

Key words: dyslalia, articulation errors, pronunciation

EFFECT OF FOXP2 IN THE DEVELOPING AND MATURE BRAIN

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The ability to develop articulate speech relies on capabilities, such as fine control of the larynx and mouth, an ability that is typical of humans and not present in the great apes. We speculate that some human-specific feature of FOXP2, perhaps one or both of the amino-acid substitutions in exon 7, affect a person`s ability to control orofacial movements and thus to develop proficient spoken language. A similar pattern of expression for *FOXP1*, a homologous gene to *FOXP2*, was also observed. In addition, *doublecortin*, a gene involved in neuronal migration, as well as the neuronal marker, *beta-tubulin*, were also present in all four areas of the developing cortex. These data indicate that *FOXP2* (and *FOXP1*) mRNAs are expressed in the human cortex at gestational week 14.

FOXP2 is the first gene relevant to the human ability to develop language. A point mutation in FOXP2 co-segregates with a disorder in a family in which half of the members have severe articulation difficulties accompanied by linguistic and grammatical impairment. Two functional copies of FOXP2 seem to be required for acquisition of normal spoken language. Thus, although the FOXP2 protein is extremely conserved among mammals, it acquired two amino-acid changes on the human lineage, at least one of which may have functional consequences. This is an intriguing finding, because FOXP2 is the first gene known to be involved in the development of speech and language.

Key words: FOXP2, point mutation, speech

LINEATION QUALITY IN SECOND AND THIRD GRADE ELEMENTARY SCHOOL CHILDREN

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In this paper authors study quality of lineation as one of elementary elements of development and acquisition of writing skills. Aim of this study was to examine quality of lineation in second and third grade elementary school children.

Lineation quality test from Tests set of Institute for Experimental Phonetics and Speech Pathology was used for assessment. Sixty-six students from the elementary school ‘Ratko Mitrovic’ in Cacak were tested. The examination included 38 children from second grade, and 28 from third grade. Thirty-three of them were girls and 33 were boys.

Our results showed that in second grade 13% of children were successfully accomplished the task, 50% made it partially and 37% were unsuccessful. Third grade children made better results. Twenty-nine percent of them made success, 50% succeeded it partially and 21% were unsuccessful. Only 14% of third grade boys were successful in comparing to 26% of second grade girls.

As expected third grade children has advanced lineation abilities then second grade children. Girls are superior in comparing to boys even when it is one year of education difference.

Key words: lineation, writing, second grade, third grade

RESTING STATE CORTICAL BRAIN ACTIVITY AND ATTENTION IN CHILDREN WITH AUTISTIC SPECTRUM DISORDER

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Introduction: There are some indications on the importance of focusing on resting state EEG and its possible links to cognitive symptoms in individuals with autistic spectrum disorder (ASD). Evidence points to disrupted neural oscillations in these individuals, which can be seen in EEG power. **Objectives:** Since EEG studies on younger ages of children with ASD are sparse as well as contradictory, we have included a wide age sample of children with ASD in order to examine possible electrophysiological pathological markers of resting state brain activity. At the cognitive level, resting state is associated with fluctuations of attention from internalized to externalized states of mind. **Aims:** in the current study, we have examined whether differences exist in spectral power of resting state within the alpha band as it is more directly linked to attentional processes. **Methods:** We have extracted spectral power from resting state EEG within the alpha band over the frontal and sensorimotor region, in a sample of 45 children with ASD, compared to an age and gender matched typical sample. **Results:** preliminary results point to group differences in EEG power when lower alpha band is considered, both in frontal and sensorimotor brain areas in a wide age sample, between children with ASD and the typical population. **Conclusions:** Results are discussed in light of EEG measurements as diagnostic tools in clinical practice as well as the importance of mapping the link between attentional deficits and EEG measures in ASD.

AN EXPLORATION OF SOME SPEECH AND LANGUAGE OPERATIONS IN NORMALLY DEVELOPING CHILDREN

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Some indicators and abilities referring to the language development in the childhood are discussed within the article. The results from a study dedicated to the speech and language operations are presented and analyzed. The focus group includes normally developing children in different ages. The scheme of the exploration ranges the following operations and functions: simultaneous gnosis, temporal gnosis, speech auditory gnosis, visual-spatial gnosis, understanding of nouns, verbs, adjectives and prepositions, comprehension of homonyms, comprehension of sentences and text. The authors also pay attention to the abilities of the children to create sentences and express different ideas. The interpretation of the results reveals some particularities in the dynamic of language development.

Key words: simultaneous gnosis, temporal gnosis, speech auditory gnosis, expressive language performance, impressive language performance, language abilities.

QUANTITATIVE ANALYSIS OF AG501 – CALIBRATION AND HEAD-MOVEMENT CORRECTION

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The AG501 (Carstens Medizinelektronik GmbH) is the latest model of articulograph used in electromagnetic articulography (EMA), and it allows real time 3D recording of the movements of the articulatory organs. Electromagnetic articulography is a position tracking technique based on the

principle of inductive measurement of distance to calculate the location of a set of sensors. EMA systems track the movements of speech articulators in the alternating magnetic field of the measurement volume using the small sensor coils attached directly to the articulators. In order to reliably perform speech movement acquisition EMA should be characterized with adequate spatial resolution and accuracy. In this work, we performed the quantitative analysis of the standard calibration procedure and stability of head-movement correction procedures. The obtained data are compared with the ones of previous model AG500.

THE THEORY OF MIND AND LANGUAGE SKILLS IN HEARING IMPAIRED CHILDREN

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Abstract. The theory of mind (TOM) is defined as the ability to understand the basic mental states of other people, their feelings, thoughts, beliefs, desires, and the ability to predict their behaviors. The theory of the mind begins to develop from the second year or earlier, along with intensive speech and language development. The early development of language and theory of mind is running at the same time, but the development of theory of mind depends on the language skills. Many studies support this relationship of language and theory of mind). Deaf or hard of hearing children are often delayed in language development compared with normal hearing peers because they are deprived of early language experience, especially if the period of auditory deprivation lasted longer. These children often develop poor social skills which affect on their socio-emotional development. The aim of this paper is to present the studies that examine the link between language and theory of mind in children with hearing impairment.

Key words: theory of mind, deafness, language, cochlear implant

NEUROPSYCHOLOGICAL FEATURES OF DEVELOPMENTAL VERBAL APRAXIA

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Developmental verbal apraxia is a neurological disorder characterized by an inability execution of coordinated movements of articulation with the absence of muscle weakness. Programming is a disorder of speech movements. There are multiple etiology, such as a genetic predisposition to a disorder of motor coordination, prenatal and natal causes, differences in the speed of development and the quality of myelination, neurological disorders, and developmental delay (S. Golubović, 2003). The aim of the research is to determine the neuropsychological characteristics of children with developmental verbal apraxia. The sample consisted of three groups of children diagnosed as developmental dysphasia (n = 15), developmental phonological disorders (N = 15) and developmental verbal apraxia (N = 15). The groups were equal in relation to age (4-5 years) and children had normal hearing. The research was done individually. The research results are qualitatively and quantitatively processed, analyzed and discussed. It was found that children with developmental verbal apraxia have a positive neurological findings and poorer intellectual functioning than children with developmental dysphasia and developmental phonological disorders.

Keywords: developmental verbal apraxia, developmental phonological disorders, developmental dysphasia, speech and language development, neurological examination, psychological examination

LEVEL OF ACQUISITION OF SCIENCE IN TYPICAL AND HEARING IMPAIRED STUDENTS

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This study is focused on the level of acquisition of the elementary school third grade science curriculum in typical and hearing impaired students. Hearing impaired students with mild and moderate hearing impairment can have speech delay including impairment of the receptive level of language, according to Vladislavjevic (2000). Why is this important? Children enter school with some level of vocabulary which is necessary for understanding and learning the school curriculum. If the vocabulary is poor, the child cannot smoothly follow the curriculum and establish verbal communication. Difficulties in expression, communication and acquisition of the school program can cause failure in school performance. The aim of this study was to establish the level of acquisition of the third grade science curriculum in typical and hearing impaired students in regular schools and to compare the grades and level of test performance in Science. The sample consisted of 12 third-grade pupils (six pupils with hearing impairment over 85 dB) and six pupils from the typical population from a regular Belgrade school. Statistical analysis shows statistically significant differences between level of test performance and grade. Comparative analysis of results between the typical and hearing impaired pupils shows that hearing impaired students are less successful in performance on the Science subject than their peers from the typical population.

Key words: science, hearing impaired pupils, typical pupils, grade, test performance

EXPERIMENTAL ANALYSIS OF EMOTIONS IN SPEAKER RECOGNITION

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It has been found that emotion variability is one of the important factors that degrades drastically performance of speaker recognition systems. In this study the impact of five different emotions on speaker recognition was analysed. The experiments were carried out using Serbian emotional speech corpus (GEES) and IKAR lab SIS-II professional forensic software. The emotions included in this study were: anger, neutral, sadness, happiness and fear. The results of the experiments conducted on 6 speakers (3 male and 3 female actors) were presented in terms of: false acceptance rate (FAR), false rejection rate (FRR) and an overall probability of speaker recognition. The results showed that emotions play very important role in speaker recognition for both gender, and that some emotions affect speaker recognition accuracy more than others.

Key words: Automatic speaker recognition, emotions, IKAR lab software.

PRONOUNS AND ADJECTIVES ACQUISITION IN PRESCHOOL CHILDREN WITH SPEECH AND LANGUAGE PATHOLOGY

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This paper presents the results of a research on preschool children with speech and language disorders classified into three groups: developmental dysphasia, developmental phonological disorders and developmental verbal apraxia. The aim of this research is to determine pronouns and adjectives acquisition in children with developmental verbal apraxia, developmental dysphasia and developmental phonological disorders. The sample consisted of 45 pre-school children aged four to

five years. The first group of subjects (N = 15) were children diagnosed with developmental verbal apraxia, the second group (N = 15) children diagnosed with developmental dysphasia, and the third group of subjects (N = 15) consisted of children diagnosed with developmental phonological disorders. The groups were uniform in relation to age, and each child tested individually. Among children with developmental phonological disorders and developmental verbal apraxia, and between children with developmental dysphasia and developmental verbal apraxia, there is no statistically significant difference in adoption pronoun singular and plural of the masculine and feminine. The adjectives acquisition is better in children with developmental phonological disorders than in children with developmental dysphasia and developmental verbal apraxia. It was also found that among children with developmental dysphasia and developmental verbal apraxia there is no difference in adjectives acquisition.

Keywords: speech and language disorders, developmental dysphasia, developmental phonological disorders, developmental verbal apraxia, grammar, pronouns, adjectives

MOTOR SPEECH DISORDERS IN PATIENTS WITH FOCAL AND DIFFUSED SUBCORTICAL VASCULAR LESIONS

Gordana Tomić, Milena Stojanović, Dragan Pavlović, Aleksandra Pavlović, Predrag Stanković, Milija Mijajlović, Jasna Zidverc - Trajković

Purpose of the research : The subcortical white matter of the human brain has an important role in the speech production and the language prosecution. In most of the cases, white matter lesions are the consequence of the small blood brain vessels disease in patients with vascular risk factors. Linguistics deficit studies, in particular motor speech disorders with vascular etiology, present specific clinical challenge, not only because of various symptomatology, but also because of heterogeneity of included subcortical structures and because of the functional complexity of injured cortical – subcortical neural paths.

Material and methods: Research includes three groups: E1-20 patients with diffused subcortical vascular lesions (DSVL). KT and/or MR finding which confirms the existence of diffused LBM with multiple lacunar or territorial strokes. E2 -15 subjects with focal subcortical vascular lesions (FSVL), KT and/or MR finding which confirms the existence of diffused LBM with multiple lacunar or territorial strokes (FSVL) and K-15 healthy subjects uniform in sex, age and educational level with EG, normal neurological finding, without pathological changes on KT and/or brain MR. Speech and language status has been studied using following tests : Boston aphasia diagnostic examination BDAE, Boston nomination test BNT, Perceptive voice and speech characteristics evaluation scale and Multidimensional computer acoustic voice and speech analysis (Dr. Speech).

Results: MRI findings showed focal or diffused (one-sided or two-sided) subcortical vascular lesions of the white matter. Our research showed motor voice and speech disorders, in patients with FSVL and DSVL, in experimental speech, manifesting as dysarthria, imprecise articulation, aphasia, slower pace and dysrrhythmia.

Conclusion : Neurolinguistics and acoustic analysis of motor speech disorders clinical image in patients with focal and diffused subcortical vascular lesions can give significant contribution for understanding speech and language mechanisms and their dysfunctional vascular etiology, as well as structuring individual rehabilitation program.

Key words : neurolinguistic analysis; acoustic analysis; motor speech disorder; dysarthria; dysphonia; white matter diffused lesions; small blood brain vessels disease; lacunar stroke.

THE INFLUENCE OF COMMUNICATION MECHANISMS FOR ACCEPTANCE AND UNDERSTANDING OF DEAF PEOPLE IN SHELTERED WORKSHOPS AND OPEN ECONOMY

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The overall objective of this study was to investigate the effect of communication mechanisms for acceptance and understanding of deaf people in sheltered workshops and in open economy.

The sample is covered by 210 subjects, 140 subjects of hearing persons and 70 deaf subjects who are employed in sheltered workshops or open economy (construction companies, printing, medical centers, beauty and hair salons, laundries, warehouses, etc.) on the territory of Belgrade, Serbia.

Data were obtained on the basis of the individual completing the questionnaire of subjects who work in sheltered workshops or open economy.

The statistical analysis was performed using descriptive statistics, χ^2 test and Pearson correlation coefficient.

The research results show that the majority of hearing subjects in open economy, 37 (52.9%) believe that they know to establish communication with deaf worker. Also, the results showed that the subjects in open economy (71.4%) and in sheltered workshops (74.3%) are not afraid to enter into conversation with the deaf employees. The majority of hearing subjects from sheltered workshops 59 (84.3%) know the rules of communication with deaf people, while significantly smaller number of subjects, 11 (15.7%) in the open economy knows how to communicate with deaf people. The results showed that the 52 (74.3%) of subjects from sheltered workshops and 31 (44.3%) of the subjects from the open economy would take the course of gestural communication, and 5 (7.1%) of respondents from sheltered workshops and 15 (21.4%) of respondents from the open economy does not want to attend a course gestural communication. These results show that a greater number of hearing participants from sheltered workshops knows how to communicate with deaf people and is ready to attend a course of gesture communication, compared to subjects with normal hearing in an open economy.

Keywords: deaf and hard of hearing, workflow, understanding, acceptance.

CIP - Каталогизација у публикацији - Народна библиотека Србије, Београд

81'234-053.2(048)
616.22-008.5-053.2(048)

THE Internacional Conference on Fundamental and Applied Aspects of Speech and Language (5 ; Beograd)

Speech and Language 2015 [Elektronski izvor] : program & abstracts / 5th International Conference on Fundamental and Applied Aspects of Speech and Language, Belgrade 17-18 October, 2015. ; [editors Mirjana Sovilj, Miško Subotić]. - Belgrade : The Institute for Experimental Phonetics and Speech Pathology : Life Activities Advancement Center, 2015 (Belgrade : Draslar partner). - 1 elektronski opticki disk (CD-ROM) : tekst ; 12 cm

Sistemski zahtevi: Nisu navedeni. - Tiraž 500. - Nasl. sa naslovnog ekrana

ISBN 978-86-89431-06-3

1. Sovilj, Mirjana [urednik]

а) Говорни поремећаји - Деца - Апстракти б) Вербална комуникација - Дефектолошки аспект - Апстракти

COBISS.SR-ID 218234892

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